

Nutrition of Diseased Swine

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Very little information is available on the feeding of the sick pig. If the subject is discussed, the ration presented is designed for maximum production in a healthy herd of swine. This does not answer the veterinarians problem because his is the reverse. He has the sick pigs. How shall he feed them to make them productive?

The rations currently being described for swine are for average swine raised under average conditions, and are not designed to meet the requirements of all swine exposed to all types of management and disease. Therefore, a ration meeting the requirements of one farm may be entirely inadequate for a neighbor's farm.

The formulation of a ration for a sick pig is a matter of art . . . the art of practice. No data are available which will indicate whether a certain ingredient in the ration should be doubled, tripled, or increased twenty or more times. The only thing which can be done is to make the change according to ones best judgment, follow the course of the disease, and adjust the ration according to the results obtained. Do not expect miracles. Recovery is slow, especially in nutritional diseases, and profitable hog production should not be guaranteed in a herd of swine where a nutritional disease has appeared.

Unless a veterinarian is located in a very unusual area his major concern in

the nutrition of swine will involve anorexia, overeating, water, salt, inadequate protein, too much carbohydrate, calcium, phosphorus, iron, zinc, magnesium, fluorides, and vitamins.

ANOREXIA

When anorexia involves an entire herd it usually means one of three things is present . . . an infectious disease such as hog cholera, an improperly formulated ration, or an unpalatable ration. When an infectious disease, such as hog cholera, is present, the pigs are just too ill to eat and there is no way the pigs can be made to eat until they recover from the disease. The anorexia associated with the improperly formulated ration will often disappear as soon as proper rations are presented to the pig.

The unpalatable ration is frequently the result of fermented or moldy feeds, the presence of treated seed corn or grain, and the contamination of feed with rancid oil, kerosene, disinfectants, and sprays. Unpalatable feeds can be mixed with linseed oil meal, soybean meal, powdered or fluid milk, or sugar to increase palatability. If swine are forced to eat something they do not like, they will have a poor rate of gain and deaths may occur. Very frequently an inadequate supply of fresh water is the cause of the anorexia.

Sows often show anorexia from exhaustion due to multiple gestation and lactation periods. This type of anorexia is very difficult to overcome. Sometimes they will eat when linseed oil meal, soybean meal, milk, eggs, or sugar are placed on

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the feed or mixed in the feed. Very often the sows are dehydrated or lack salt. The intravenous administration of saline, electrolyte solutions, and glucose will frequently bring about dramatic results. Calcium gluconate will correct a calcium deficiency and indirectly improve the appetite. The administration of saline, glucose, milk, or milk replacers by means of the stomach tube is also very effective. Transfusion of one quart of blood, together with antishock treatment, will frequently improve the health of the sow and normal feed consumption may be resumed.

OVERFEEDING

There are as many problem herds as the result of overfeeding as there are to underfeeding. The problem of overfeeding is becoming increasingly more important as the intensified type of agriculture becomes more prevalent.

Pregnant sows should be kept in good condition but not fat. Often sows are fed too much corn or allowed to be in the corn fields where they find too much grain. The amount fed to the sows should be regulated according to their condition. Oats, alfalfa meal, and pasture are desirable feeds which will prevent sows from becoming too fat. If the sows become too fat, increase the amount of oats or alfalfa meal. If they become too thin, increase the amount of corn.

A RATION FOR SOWS DURING THE GESTATION PERIOD

A well-fed pregnant sow will probably have little difficulty during the parturition and lactation periods. The following is a complete ration for self-feeding sows during gestation:

Ground corn	600 pounds
Ground oats	600 pounds
Alfalfa Meal	500 pounds
Sow Supplement	300 pounds

SOW SUPPLEMENT

Meat and bone scraps or tankage	400 pounds
Soybean Oil Meal	700 pounds
Standard wheat middlings	200 pounds
Dehydrated Alfalfa meal	500 pounds
Steamed bone meal	160 pounds
Iodized salt	40 pounds
Trace mineral premix	15 pounds
Vitamin D ₂	5 mill. I.U.

Riboflavin	2 gm.
Calcium pantothenate	2 gm.
Niacin	90 gm.
Choline chloride	200 gm.
Vitamin B ₁₂	70 mg.
Antibiotics	70 gm.

A RATION FOR SOWS FOLLOWING PARTURITION

Sows usually need no feed during the first 12 hours after parturition unless they become restless and want to eat. Provide them with plenty of warm water.

During the second day, feed two or three pounds of feed. Increase the amount of feed one or two pounds per day until the sow is eating all she will eat. If diarrhea appears in the baby pigs, reduce the amount of feed fed to the sow since diarrhea at this time is often due to overeating caused by the excessive lactation. The following is a suggested ration:

Ground corn	600 pounds
Ground oats	600 pounds
Alfalfa meal	500 pounds
Sow Supplement	300 pounds

A RATION FOR SOWS ONE WEEK AFTER PARTURITION

One week after parturition the ration is changed to a high energy combination which will provide the nutrients the sow needs for lactation. The following is a suggested ration:

Ground corn	1,200 pounds
Ground oats	400 pounds
Sow Supplement	400 pounds

In some herds where the condition of the sows is poor, the above ration can be fed, in reduced amounts, for two weeks before, as well as after parturition. If the sows are constipated, 50 to 100 pounds of wheat bran may be added to this ration for a few days.

A RATION FOR SOWS NURSING PIGS WHICH HAVE A DIARRHEA

Nursing pigs will develop a diarrhea if they are overfed. Overfeeding can be controlled by reducing the amount of ration fed to the sow. When the sow's ration is reduced, her milk secretion will also become reduced in amount.

If lactation control will not prevent the diarrhea, then increase the amounts of vitamins B and antibiotic in the ration during the last two weeks of gestation and

the first week after parturition. The following is a suggested ration:

Ground corn	600 pounds
Ground oats	600 pounds
Alfalfa meal	500 pounds
Sow supplement	300 pounds
Vitamin premix	2 pounds*
Antibiotics (Aureomycin)**	400 grams

* The critical changes in the ration have been underlined.

** Cyanamid

HERDS OF SWINE IN WHICH DOWNER SOWS ARE APPEARING

To prevent downer sows allow them to become mature before they are bred. Then arrange the breeding program so that the sows will have one or two litters a year. Most downer sows occur in younger animals that are exhausted by two or three successive gestation and lactation periods. The following is a suggested ration:

Ground corn	600 pounds
Ground oats	600 pounds
Alfalfa meal	500 pounds
Sow supplement	300 pounds
Limestone	10 pounds
Vitamin premix	2 pounds

VITAMIN PREMIX

Vitamin A (20,000 U/gm.)	200 grams
Vitamin D ₂ (142,000 U/gm.)	5.7 grams
Riboflavin	4.1 grams
Calcium pantothenate	5.3 grams
Niacin	22.0 grams
Vitamin B ₁₂ (20 mg./lb.)	450.0 grams
Thiamine	2.0 grams
Pyridoxine	2.0 grams

The limestone is added to overcome a calcium deficiency which is frequently present. The vitamin premix contains the essential vitamins for swine.

HERDS OF SWINE IN WHICH THERE IS AN EXCESSIVE NUMBER OF ABORTIONS, STILLBIRTHS, AND WEAK PIGS

Improve the herd management as much as possible according to the farm situation.

Eliminate any infectious disease such as brucellosis or leptospirosis.

Allow the sows to become older before they are bred. Many young sows are not able to carry the fetuses to term, or if born, there is an excessive number of weak pigs.

Arrange the breeding program so that the sows have one or two litters a year.

Physically immature sows or sows that are not in the best state of nutrition and health experience exhaustion from multiple gestation and lactation periods; and abortions, stillbirths, and weak pigs are the result. The following is a suggested ration for improving the health of the sows:

Ground corn	600 pounds
Ground oats	600 pounds
Alfalfa meal	500 pounds
Sow supplement	300 pounds
Limestone	5 pounds
Vitamin premix	2 pounds
Antibiotic (Aureomycin)	100 grams

A RATION FOR THE GROWING PIG

It is not possible to present a ration for every age of the growing pig. As a result, a ration for the pig which weighs from 25 to 100 pounds has been selected, and an attempt will be made to show how this ration can be manipulated to meet the therapeutic needs of the animal. A suggested growing ration for a pig is as follows:

Corn	1500 pounds
Meat scrap (50%) or tankage	100 pounds
Soybean meal (44%)	300 pounds
Alfalfa meal (17%)	100 pounds
Limestone	10 pounds
Bone meal	10 pounds
Trace minerals and salt	10 pounds
Vitamin premix	1.5 pounds

VITAMIN PREMIX

Vitamin A (20,000 U/gm.)	200.0 grams
Vitamin D ₂ (142,000 U/gm.)	5.7 grams
Riboflavin	4.1 grams
Calcium pantothenate	5.3 grams
Niacin	22.0 grams
Vitamin B ₁₂ (20 mg./lb.)	450.0 grams
Thiamine	2.0 grams
Pyridoxine	2.0 grams

A RATION FOR GROWING PIGS IN WHICH PNEUMONIA AND OTHER RESPIRATORY DISEASES ARE PRESENT

Weather permitting, use a dispersal system of swine management on clean alfalfa pasture. Herds of swine free from pneumonia can be raised in this manner. The alfalfa and sunshine supplies the additional vitamins A, B, and D, and yet undescribed growth factors which stimulate and improve the metabolic activity of pigs.

If alfalfa pasture is not available, provide dry, clean, well ventilated pens. Then

increase the amount of vitamin premix and alfalfa meal in the ration and add an antibiotic. The following is a suggested ration for a growing pig weighing 25 to 100 pounds:

Corn	<u>1400 pounds</u>
Soybean meal	<u>300 pounds</u>
Meat scrap or tankage	<u>100 pounds</u>
Alfalfa meal	<u>200 pounds</u>
Limestone	<u>10 pounds</u>
Bone meal	<u>10 pounds</u>
Trace mineral and salt	<u>10 pounds</u>
Vitamin premix	<u>3 pounds</u>
Antibiotic (Aureomycin)	<u>400 grams</u>

A RATION FOR GROWING PIGS IN WHICH AN OSTEOPATHY AND A SECONDARY ARTHRITIS ARE PRESENT

An osteopathy due to mineral imbalance in the ration is very common in the pig. Since the pig is fed large amounts of grain, it is usually a deficiency of calcium which produces the bone disease. The addition of bone meal, calcium phosphate, or some other combination of calcium and phosphorus is not the answer to correcting this basic deficiency. It is mineral balance that is needed, and to balance the excessive phosphorus in the ration it is calcium which is required. Calcium carbonate, high-calcium limestones (38% calcium), and ground oyster shell are suitable as a source of calcium.

Recovery from the osteopathy can be hastened if the rate of growth is suppressed by reducing the total amount of ration fed. The following is a suggested ration:

Corn	<u>1500 pounds</u>
Soybean meal	<u>300 pounds</u>
Meat scrap or tankage	<u>100 pounds</u>
Alfalfa meal	<u>100 pounds</u>
Limestone	<u>20 pounds</u>
Bone meal	<u>10 pounds</u>
Trace minerals and salt	<u>10 pounds</u>
Zinc carbonate	<u>0.4 pounds</u>
Vitamin premix	<u>3 pounds</u>
Antibiotic (Aureomycin)	<u>400 grams</u>

RATIONS DESIGNED TO CORRECT AN EXCESSIVE AMOUNT OF MINERAL IN THE WATER SUPPLY

Good fresh water, preferably at a temperature of 45 degrees, must be provided for swine. Excessive mineral in the water is a problem. Swine will not drink enough water if it is unpalatable. The high magnesium content of some water found in

open-pit coal mines or in well water will cause an imbalance of the mineral content of the ration and lameness is the result. Excessive amounts of magnesium increase the calcium requirements. Sulfides also interfere with calcium metabolism. If a new water supply cannot be provided, the excessive amount of magnesium or sulfide in the ration can be balanced by increasing the amount of calcium. The amount of calcium in the ration is usually doubled. Then, depending upon the response, the amount of calcium in the ration is either increased or decreased.

Iron interferes with phosphorus metabolism. When present in excessive amounts a bone disease will appear. When this occurs the amount of bone meal in the ration is doubled. Then later, depending upon the response, the amount of bone meal in the ration is either increased or decreased.

A RATION FOR GROWING PIGS HAVING ENTERITIS

If possible, change the environment of the pig. Moving the pigs to a new location will frequently control the diarrhea.

Provide adequate living space for the pigs. Pigs in crowded pens will develop a diarrhea even though the ration is balanced.

Increase the amount of fiber in the ration. Low fiber rations cause a hemorrhagic and ulcerative enteritis. The ration should contain 7 per cent of fiber.

Prevent the pigs from overeating. Reduce the amount of ration fed by one-third or one-half until the pigs have overcome their enteric disorder. The following is a suggested ration:

Corn	<u>550 pounds</u>
Oats	<u>750 pounds</u>
Soybean meal	<u>400 pounds</u>
Meat scrap	<u>100 pounds</u>
Alfalfa meal	<u>200 pounds</u>
Limestone	<u>10 pounds</u>
Bone meal	<u>10 pounds</u>
Trace minerals and salt	<u>10 pounds</u>
Vitamin premix	<u>4 pounds</u>
Sodium arsanilate	<u>180 grams</u>
	(fed for 5 days)
Antibiotic (Aureomycin)	<u>400 grams</u>

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A RATION FOR GROWING PIGS HAVING ENTEROTOXEMIA, OVEREATING DISEASE, OR GUT EDEMA

Enterotoxemia, overeating disease, or gut edema cause considerable death loss in growing pigs each year. The etiology of this disease has not been explained but it is associated with too much feed. The disease is not new and has been recognized by practitioners for more than thirty years.

The period before and after vaccination is a particularly critical time. Hogs should be fed one-half to two-thirds of the normal amount of feed for a week before vaccination and preferably for two weeks after vaccination.

The following is a ration designed to prevent overeating disease:

Ground corn	500 pounds
Ground oats	900 pounds
Alfalfa meal	200 pounds
Wheat middlings	200 pounds
Tankage	100 pounds

Soybean meal	50 pounds
Linseed meal	25 pounds
Steamed bone meal	40 pounds
Salt	10 pounds
Trace mineral	7 pounds
Antibiotics (Aureomycin)	50 grams

When overfeeding occurs, reduce the total amount of feed fed and increase the amount of oats and alfalfa in the ration. The farmer will probably object, but it is better to have the pigs reach market weight a week or two later than to lose them for overeating.

(Continued from page 19)

¹Kampmeier, Otto F. and Emil W. Hospodar. Mounting of stained serial slices of the brain as wet specimens in transparent plastic. *Anatomical Record*, Vol. 110, no. 1, May 1951, pp. 1-15.

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³LeMasurier, H. E. Simple method of staining macroscopic brain sections. *Arch of Neur. and Psychiat.*, 34:1065-1067, 1935.

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